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Amendments to the Claims:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Withdrawn): A method for producing a transgenic *C. elegans* that expresses a human seven transmembrane receptor (7TMR) in the sensory neurons that correlate with behavior, said method comprising the steps of:

(a) producing a transgene by operably linking a gene expression construct that encodes a human 7TMR to a sensory neuron promotor; and

(b) introducing said transgene into said *C. elegans*, such that said *C. elegans* expresses said human 7TMR in its sensory neurons that correlate with behavior.

5. (Withdrawn): A method for producing a transgenic *C. elegans* that expresses a human 7TMR in the sensory neurons that correlate with behavior, said method comprising the steps of:

(a) producing a first transgene by operably linking a gene expression construct that encodes a human 7TMR to a sensory neuron promotor;

(b) producing a second transgene by comprising an accessory protein operably linked to a promotor; and

(c) introducing said first and second transgenes into said *C. elegans*, such that said *C. elegans* coexpresses both said accessory protein and said human 7TMR in the sensory neurons that correlate with behavior.

6. (Withdrawn): A method for identifying at least one ligand of at least one human 7TMR, said method comprising the steps of:

(a) providing at least one *C. elegans* that expresses at least one human 7TMR in the sensory neurons that correlate with behavior;

(b) contacting said at least one *C. elegans* with at least two different concentrations of at least one test substance; and

(c) detecting modulation of behavior of said at least one *C. elegans* in response to said at least one test substance.

7. (Withdrawn): A method for identifying at least one ligand of at least one human 7TMRs, said method comprising the steps of:

(a) providing at least one *C. elegans* that expresses at least one human 7TMR in the sensory neurons that correlate with water-soluble chemorepulsive behavior;

(b) placing a medium into a first portion of a receptacle, wherein said receptacle is divided into at least two portions;

(c) adding at least two different concentrations of at least one chemorepulsant substance to the first portion of said receptacle;

(d) adding said at least one *C. elegans* to the second portion of said receptacle; and

(e) detecting, after a suitable time period, the behavioral response of said at least one *C. elegans* to said at least one chemorepulsant substance.

8. (Withdrawn): A method for identifying at least one ligand of at least one human 7TMR, said method comprising the steps of:

(a) providing at least one *C. elegans* that expresses at least one human 7TMR in the sensory neurons that mediate water-soluble chemoattractive behavior;

(b) placing a medium into a first portion of a receptacle, wherein said receptacle is divided into at least two portions;

(c) adding at least two different concentrations of at least one chemoattractant substance to the first portion of said receptacle;

(d) adding said at least one *C. elegans* to the second portion of said receptacle; and

(e) detecting, after a suitable time period, the behavioral response of said at least one *C. elegans* to said at least one chemoattractant substance.

9. (Withdrawn): A method for identifying at least one ligand of a human 7TMR said method comprising the steps of:

(a) providing at least one *C. elegans* that expresses a human 7TMR in the sensory neurons that correlate with behavior;

(b) placing at least two different concentrations of at least one test substance on a substrate surface that contains growth medium;

(c) placing a uniform lawn of bacteria on the surface of said growth medium;

(d) contacting said at least one *C. elegans* with said uniform lawn of bacteria; and

(e) detecting, after a suitable time period, a decrease in the density of said uniform lawn of bacteria.

10. (Withdrawn): A method for identifying at least one ligand of at least one human 7TMR, said method comprising the steps of:

(a) providing at least one *C. elegans* that expresses a human 7TMR in the sensory neurons that correlate with behavior;

(b) placing a medium in a receptacle;

(c) placing at least two different concentrations of at least one test substance on said medium;

(d) adding said at least one *C. elegans* to said receptacle; and

(e) detecting, after a suitable time period, the behavioral response of said at least one *C. elegans* over the surface of said medium.

11. (Withdrawn): A method for evaluating the potency of human 7TMR activation by a known ligand, said method comprising the steps of:

(a) providing at least *C. elegans* that expresses at least one human 7TMR in the sensory neurons that correlate with behavior, wherein said at least one human 7TMR has a known ligand;

(b) contacting said at least one *C. elegans* with said ligand and at least one structurally related compound; and

(c) detecting the behavioral response of said at least one *C. elegans* to said at least one structurally related compound; and

(d) comparing the behavioral response of said at least one *C. elegans* to said ligand to the behavioral response of said at least one *C. elegans* to said at least one structurally related compound.

12. (Currently Amended): A method for identifying at least one test substance that is an antagonist of a human 7TMR, said method comprising the steps of:

(a) providing at least one transgenic *C. elegans* that expresses a human 7TMR in the sensory neurons that correlate with behavior ~~pan-neuronally~~, wherein said human 7TMR is activated by an endogenous ligand, such that said transgenic *C. elegans* exhibits a known phenotype;

(b) contacting said at least one transgenic *C. elegans* with at least one test substance, wherein said at least one test substance is distributed in a medium;

(c) determining whether said at least one test substance causes a suppression of said known phenotype in said at least one transgenic *C. elegans*; and

(d) identifying said at least one test substance that causes a suppression of said known phenotype in said at least one transgenic *C. elegans* as an antagonist of said human 7TMR.

13. (Withdrawn): A method for identifying a surrogate ligand present in a strain of transgenic *C. elegans* that expresses a human 7TMR pan-neuronally, wherein said strain of transgenic *C. elegans* exhibits a known phenotype, such that said human 7TMR is activated by an endogenous ligand, said method comprising the steps of:

(a) providing a strain of human 7TMR-expressing transgenic *C. elegans*, wherein said strain of transgenic *C. elegans* exhibits a known phenotype;

(b) subjecting said strain of transgenic *C. elegans* to at least one mutagenic screen; and

(c) determining whether said at least one mutagenic screen results in a suppression of said known phenotype in said strain of transgenic *C. elegans*.

14. (Withdrawn): A method for identifying at least one substance that agonize the activity of a human 7TMR, said method comprising the steps of:

(a) providing at least one transgenic *C. elegans* that expresses a human 7TMR pan-neuronally, wherein said at least one transgenic *C. elegans* does not exhibit a known phenotype because said human 7TMR is not activated by an endogenous ligand;

(b) contacting said at least one transgenic *C. elegans* with at least one test substance, wherein said at least one test substance is distributed in a medium;

(c) determining whether said at least one test substance causes said at least one said transgenic C. elegans to exhibit a known phenotype; and

(d) identifying said at least one test substance that causes said at least one said transgenic C. elegans to exhibit a known phenotype as an agonist of said human 7TMR.

15. (New): The method as claimed in Claim 12, wherein said behavior is volatile chemoattraction, and said sensory neurons are AWA neurons.

16. (New): The method as claimed in Claim 12, wherein said behavior is volatile chemorepulsion, and said sensory neurons are AWB neurons.

17. (New): The method as claimed in Claim 12, wherein said behavior is water-soluble chemoattraction, and said sensory neurons are chosen from the group of: ASE, ADF, ASG, and ASI neurons.

18. (New): The method as claimed in Claim 12, wherein said behavior is water-soluble chemorepulsion, and said sensory neurons are selected from the group consisting of: ASH and ADL neurons.

19. (New): The method as claimed in Claim 35, wherein said behavior is dauer formation, and said sensory neurons are selected from the group consisting of: ASI, ASG, and ADF neurons.

20. (New): The method as claimed in Claim 35, wherein said behavior is chosen from the group of: thermoattraction and thermorepulsion, and said sensory neurons are AFD neurons.

21. (New): The method as claimed in Claim 12, wherein the medium is chosen from the group of: buffer, growth medium, and agar.

22. (New): The method as claimed in Claim 12, wherein the medium is a growth medium that comprises a biomolecular separation in a matrix.

23. (New): The method as claimed in Claim 12, said matrix is chosen from the group of: agarose and polyacrilimide.